

<p>2003-291177/29 A26 BADI 2001.06.26          BASF AG *DE 10130782-A1          2001.06.26 2001-1030782(+2001DE-1030782) (2003.01.02) B01J          35/10, 21/16, C08G 65/20  <b>Catalyst for production of poly-tetrahydrofuran and derivatives comprises pellets or particles with a specified volume, a pore radius distribution with at least one peak in a given range and specified high levels of porosity</b>          C2003-075863          Addnl. Data: SCHLITZER S, SIGWART C, DOERFLINGER W, HESSE M, FISCHER R</p>	<p>A(2-A7, 5-H5, 10-D3)</p> <p>in presence of telogen(s) and/or comonomer(s), is in the form of catalyst pellets or particles with a volume of at least 0.05 mm<sup>3</sup>, showing (a) a pore radius distribution with at least one peak in the range 100-5000 Å and/or (b) pore volumes of more than 0.05 cm<sup>3</sup>/g for pores with a radius of 200-3000 Å and/or more than 0.075 cm<sup>3</sup>/g for 200-5000 Å and/or more than 0.1 cm<sup>3</sup>/g for radii greater than 200 Å.</p> <p>INDEPENDENT CLAIMS are also included for</p> <p>(1) a method for the production of (I) from powder by known procedures, preferably tableting, agglomeration or extrusion, with the addition of auxiliary materials (preferably binders, lubricants and/or solvents), especially by agglomeration or extrusion with the addition of water.</p> <p>(2) a method as described above for the production of PTHF etc. using (I) as catalyst.</p>
<p><b>NOVELTY</b>          A catalyst for the (co)polymerisation of tetrahydrofuran, in the form of pellets with a volume of at least 0.05 mm<sup>3</sup>, showing a pore radius distribution with at least one peak in the range 100-5000 Å and/or a porosity of more than 0.05 cm<sup>3</sup>/g in the range 200-3000 Å and/or more than 0.075 cm<sup>3</sup>/g at 200-5000 Å and/or more than 0.1 cm<sup>3</sup>/g at above 200 Å.</p> <p><b>DETAILED DESCRIPTION</b>          A catalyst (I) for the production of polytetrahydrofuran (PTHF) and its copolymers, diesters or monoesters by polymerisation of THF</p>	<p><b>USE</b>          For the production of polytetrahydrofuran and its copolymers, diesters or mono-esters. PTHF is used, e.g. as a diol for the production</p> <p>DE 10130782-A+</p>

of polyurethane, polyester and polyamide elastomers.

#### ADVANTAGE

A tetrahydrofuran polymerisation catalyst which is easily separable and shows a high productivity, especially in fluidized bed or solid bed processes.

#### EXAMPLE

387 g Bleicherde K10 (RTM: acid-activated layered silicate; powder activity = 7.8 g/g/hour) was precalcined at 300 °C, intensively mixed with 300 ml water in a kneader for 25 minutes, extruded to pellets (diameter 2.5 mm; average length 10 mm), dried and then calcined at 350 °C. The catalyst obtained showed a bimodal pore radius distribution (by mercury porosimetry) with a weakly pronounced peak at 20-100 Å and a clear peak at 3000 Å; the porosity in the 200-3000 Å range was 0.32 cm<sup>3</sup>/g. The activity of this catalyst (in the polymerisation of tetrahydrofuran) was 4.9 times that of catalyst pellets showing no peak in the distribution curve above 20 Å and a porosity of 0.035 cm<sup>3</sup>/g in the range 200-3000 Å, which were obtained by a similar method without precalcination (using 225 ml water).

#### TECHNOLOGY FOCUS

Inorganic Chemistry - Preferred Catalysts: Catalysts (I) which show both the features (a) and (b), preferably with 50% of the total pore volume consisting of pores with a diameter of less than 0.1 micron. The volume of the catalyst is 0.2, especially 1 mm<sup>3</sup>. (I) is produced from a precursor in the form of powder, preferably with an initial activity of at least 0.5 g polymer/g catalyst/hour. Preferred catalysts are layered silicates, especially those of the montmorillonite-saponite group, kaolin-serpentine group or polygorskite-sepiolite group, preferably montmorillonite, hectorite, kaolin, attapulgite and/or sepiolite.

Polymers - Preferred Method: Continuous or discontinuous polymerisation, preferably continuous polymerisation, especially by a suspension or fluidized bed method, more especially a fluidized bed method, particularly using a sump procedure. The method is used especially for the polymerisation of THF in presence of carboxylic acid anhydrides (preferably acetic anhydride) to give PTHF or its derivatives or copolymers with molecular weights of 250-10000, preferably 500-5000, especially 650-4000.

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